

STUDENT LEARNING OBJECTIVE – MATH MIDDLE SCHOOL

Content Area: Algebra

Grade Level: 9

Student Learning Objective Statement:

Students will be able to model real-world situations and solve algebraic problems using their knowledge of equations (linear, quadratic, simple exponential, and rational).

Rationale:

As students master the skills described above, they will have the building blocks needed for Algebra 2, Geometry, and Advanced Math. Similar to many other cohorts of freshman, their baseline data shows a substantial weakness in this critical area as compared to other skills. Thus, this must be a priority focus for throughout the year.

Aligned Standards:

- A-REI.1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
- A-REI.2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
- A-REI.3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
- A-REI.4. Solve quadratic equations in one variable.
- A-REI.6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
- A-REI.7. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.
- A-REI.8. (+) Represent a system of linear equations as a single matrix equation in a vector variable.
- A-REI.9. (+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3×3 or greater).
- A-REI.10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
- A-REI.11. Explain why the x -coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.
- A-CED.1. Create equations and inequalities in one variable and use them to solve problems.
- A-CED.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- A-CED.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.
- A-CED.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

Students:

All 75 students in my 3 Algebra sections

Interval of Instruction:

SY 2012-2013

Baseline:

I administered a baseline assessment the first week of classes modeled after the district common assessment for Pre-Algebra that assessed 8th grade standards with a focus on pre-algebra and basic algebra skills. While students had relatively strong abilities with operation skills and expressions, working with equations was much more difficult for them, which is not surprising.

Expressions: avg. 80%

Equations: avg. 65%

Operation Skills avg. 78%

Target(s):

1. For items pertaining to modeling and solving equations on the final exam students will average 80% or higher.
2. The 12 students (16%) who tested below 50% on the baseline for equations will each make gains of 30% on items pertaining to modeling and solving equations.

Rationale for Target(s):

An ability to model and solve equations is the weakest skill among this group of students. This mirrored last year's cohort and my target then was 80%. After learning more about CCSS, working with the new Department Chair, and implementing a number of strategies and interventions last year I feel more confident putting those in place for all students starting at the beginning of the year and so am more confident that students will be able to achieve a higher average across the board.

Evidence Source(s):

The final exam is a district-wide common assessment that was developed last year. 70% of test-questions pertain to modeling and solving algebraic problems through their knowledge of varied equations. I will extract the data from those items to analyze for this SLO.

Administration:

The exam will be administered by me in class during exam week.

Scoring:

The other Algebra teacher, the Math Department Chair, and I will develop a key together, and then score exams together.